

**KARAKTERISASI KOMUNITAS BAKTERI INDIKATOR
PADA TAMBAK UDANG UNTUK EVALUASI KESEHATAN
MEDIA BUDIDAYA**

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ABSTRAK

Penelitian ini bertujuan menganalisis karakteristik komunitas bakteri indikator (*Vibrio* spp., *Pseudomonas* spp., *Bacillus* spp., dan total bakteri heterotrof) serta hubungannya dengan parameter kualitas air pada tambak udang vaname (*Litopenaeus vannamei*) sistem intensif di Penyabangan, Kabupaten Buleleng, Bali. Metode deskriptif observasional diterapkan melalui *purposive sampling* di empat lokasi (Kolam 1, Kolam 2, Tandon, dan IPAL) selama dua musim. Karakterisasi bakteri dilakukan melalui isolasi pada media selektif, pengamatan morfologi, pewarnaan Gram, dan uji biokimia. Hasil penelitian mengidentifikasi 27 spesies dari 9 genus dengan kelimpahan total bakteri berkisar $3,4 \times 10^6 - 1,0 \times 10^7$ CFU/mL. Rasio *Vibrio* terhadap total bakteri ($V/TB > 0,1$) menunjukkan kerentanan ekologis terhadap vibriosis. Analisis Spearman mengonfirmasi bahwa salinitas berkorelasi positif sangat kuat dan signifikan terhadap kelimpahan total bakteri serta *Pseudomonas* spp. ($r_s = 1,000; p < 0,05$). Disimpulkan bahwa salinitas berperan sebagai *environmental filter* utama pengendali dinamika bakteri, sehingga pemantauan berkala penting sebagai *early warning system* kesehatan media budidaya.

Kata Kunci: Bakteri Indikator, Tambak Intensif, *Litopenaeus vannamei*, *Vibrio* spp. *Pseudomonas* spp.

CHARACTERIZATION OF INDICATOR BACTERIAL COMMUNITIES IN SHRIMP PONDS FOR EVALUATING CULTIVATION MEDIA HEALTH

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ABSTRACT

This study aimed to analyze the characteristics of indicator bacterial communities (*Vibrio* spp., *Pseudomonas* spp., *Bacillus* spp., and total heterotrophic bacteria) and their relationship with water quality parameters in intensive Pacific white shrimp (*Litopenaeus vannamei*) ponds at Penyabangan, Kabupaten Buleleng, Bali. A descriptive observational method with purposive sampling was applied across four sites (Pond 1, Pond 2, Reservoir, IPAL) during two seasons. Bacteria were isolated using selective media, followed by morphological, Gram staining, and biochemical characterization. Results identified 27 species across 9 genera, with total bacterial abundance ranging from 3.4×10^6 to 1.0×10^7 CFU/mL. The *Vibrio* to total bacteria ratio ($V/TB > 0.1$) indicated high ecological vulnerability to vibriosis. Spearman analysis confirmed that salinity had a very strong, statistically significant positive correlation with total bacterial abundance and *Pseudomonas* spp. ($r_s = 1.000; p < 0.05$). In conclusion, salinity serves as the primary environmental filter governing bacterial dynamics, highlighting the need for routine monitoring as an early warning system for aquaculture media health.

Keywords: Indicator Bacteria, Salinity, Intensive Pond, *Litopenaeus vannamei*, *Vibrio* spp. *Pseudomonas* spp.